REMARKS

Status of the Claims

In the present Amendment, claims 1, 2, 4, 7, 8, 13-15, 17, 19, 21 and 23-28 are amended, and claims 30-33 are added, of which claims 1, 31 and 33 are now independent.

Support for the amendments is addressed below.

Independent Claim 1

Claim 1 is amended by deleting the recitation starting from: "collecting said precipitated food grade..." in part (c) until the end of the claim. The following recitation is added to the end of claim 1: "wherein said lupin meal or flour has not been treated with an organic solvent to remove or strip fat or oil from said meal or flour."

Claim 1 is now directed to PF1 only. PF2 and PF3 are addressed separately in independent claims 31 and 33 (see further below). It is clear from the wording of claim 1 as originally filed that part (d) and (e) were optional. This provides a basis for deletion of part (d) in amended claim 1. Reference can also be made to the description at page 3, line 4 of the specification.

With regard to the previous deletion of the recitation "collecting said precipitated food grade lupin protein extract (PF1), adjusting the pH of the extract to pH 5 to 6.5 and thereafter drying the extract to give a proteinaceous extract (PF1)" from claim 1, the specification makes it clear this step is optional in relation to PF1. For example, reference can be made to the description at page 8, lines 16 to 24 of the specification. Therein, the specification indicates that the pH of PF1 may be adjusted between pH 5 and 7, preferably between 5.5 and 6.5, to improve desired functional properties. This makes it clear that the pH adjustment of the extract to pH 5 to 6.5 is optional, and may be done if desired. That is, the pH adjustment is not essential to the

performance of the invention. Similarly, the subsequent drying step is also optional since it occurs after the optional pH adjustment step (see page 8, line 21 of the present specification). Since the pH step is optional, the step "thereafter" (the wording as used in the claim) is therefore also optional. Thus, the deletion of the above-quoted text from claim 1 is supported by the specification.

As noted above, the recitation "wherein said lupin meal or flour has not been treated with an organic solvent to remove or strip fat or oil from said meal or flour" was added to claim 1. Support for this amendment can be found, for example, on page 7, paragraphs 1 and 2. Taken together, these paragraphs clearly provide a basis for the wording of "to remove or strip fat or oil" since both of these operations are referred to therein.

Dependent Claim 30

Claim 30 is added herein. Claim 30 depends from claim 1 and recites a preferred pH range between 3 to 5 for formation of PF1. Support for claim 30 can be found, for example, in the description on page 8, line 18 of the specification.

Independent Claim 31

Claim 31 is added herein as an independent claim and is based on original claim 1. The "amendments" discussed below are thus the changes from original claim 1.

The same amendment for part (c) of claim 1 addressed above has been made to part (c) of claim 31.

Part (d) of the claim is amended for clarification by including language relating to the formation of PF2 in the range of pH 5 to 7. The additional language of "to form a protein precipitate and recovering said precipitate from a lupin protein extract (PF2)" is clearly supported by the description from page 8, last line to page 9, line 3 of the specification. It is

clear from this description that the pH adjustment step provides a finely precipitated lupin protein which may then be recovered (e.g., by centrifugation) to obtain a protein extract.

The recitation "followed by dehydrating the soluble lupin protein component to give a third food grade lupin protein fraction (PF3)" has been deleted. This recitation relates to production of PF3 and is included in new claim 33, which is addressed below. This step does not bear on the production of PF2, and so is not an essential step in the method defined by claim 31. In addition, the description at page 9, lines 1 to 4 of the specification provides support for a process for the formation of PF2 that does not specifically include a dehydrating step that can lead to the additional formation of PF3. Specifically, page 9, line 1 of the specification states that PF2 formation is completed merely by the pH adjustment resulting in finely precipitated lupin proteins which may then be recovered by centrifugation. Although Fig. 1 shows a flow diagram that includes PF3 formation via a subsequent dehydration step, the specification makes it clear on page 9, line 19 that Fig. 1 and associated commentary is merely an embodiment of the invention. The claims should not be limited to the illustrated embodiment. Accordingly, one of ordinary skill would understand that this step is not essential for a process (as defined in claim 31) concerned with production of PF2 only.

Claim 31 also recites "wherein said lupin meal or flour has not been treated with an organic solvent to remove or strip fat or oil from said meal or flour." This recitation is addressed above with respect to claim 1.

Claim 31 also provides further clarity such that PF2 is now indicated in the claim as lupin protein "extract," instead of being indicated as an "isolate." Support for can be found in the claims, as well as in numerous points in the specification (for example, pages 2, 3 and 4).

Dependent Claim 32

Claim 32 is added and recites a preferred pH range for the formation of PF2. Support for claim 32 can be found, for example, in the description at page 8, lines 30 to 31 of the specification.

Independents Claim 33

Independent claim 33 is added and is based on original claim 1. The "amendments" discussed below are thus the changes from original claim 1.

Part (c) of claim 33 is in the same form as discussed above in relation to claims 1 and 31.

Part (d) of the claim is amended in line with independent claim 31 (discussed above) to include the recitation "to form a protein precipitate." However, the subsequent recitation "and recovering lupin protein isolate (PF2)" has been deleted. It is clear from the description in the first paragraph on page 9 of the specification that the process does not require recovery of the precipitate formed at pH 5 to 7, although this can be done if desired. In an alternative, the supernatant is simply dehydrated (e.g., with a food grade alcohol) to give the third food grade lupin protein extract (PF3). Since claim 33 relates to production of PF3, this clarifying amendment is appropriate.

As with claims 1 and 31, claim 33 includes the recitation "wherein said lupin meal or flour has not been treated with an organic solvent to remove or strip fat or oil from said meal or flour."

No new matter is added, and entry of the Amendment is respectfully requested. Upon entry of the Amendment, claims 1-4, 7, 8, 10 and 13-33 will be pending.

The Present Claims are Supported by the Specification

In Paragraph No. 1, on page 2 of the Office Action, claims 1-4, 7, 8, 10, 13-26 and 29 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

The Examiner criticized the amendment to claim 1 in the previous response that deleted the recitation "raising the pH of the acid soluble lupin protein component to pH 5-7."

Applicants traverse.

In addition to the discussion above regarding the amendments to the claims, Applicants point out that amended claim 1 does not address the formation of PF2. Further, without acquiescence in the merits of the rejection, Applicants point out that independent claims 31 and 33, which recite the formation of PF2, include the recitation "raising the pH of the acid soluble lupin protein component to pH 5-7."

In view of the above, Applicants respectfully request reconsideration and withdrawal of the rejection of the claims under 35 U.S.C. § 112, first paragraph.

The Present Claims are Clear, Definite and Unambiguous

In Paragraph No. 2, on page 2 of the Office Action, claims 1-4, 7, 8, 10, 13-26 and 29 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite.

Applicants traverse.

Each of the Examiner's positions is addressed individually as follows.

(a) With regard to claim 1, the Examiner believes that it is not clear how the protein isolate PF2 is recovered and how it differs from protein faction PF3.

Applicants disagree. The way in which PF2 is recovered would be clear to one of ordinary skill in the art in light of the specification as a whole, and in particular, the description at page 8, last line to page 9, line 3 of the specification, wherein a method (centrifugation) for recovering the extract corresponding to PF2 is provided.

(b) With regard to claims 13-15, 17, 19 and 21, the Examiner believes that it is not clear whether the recited "lupin protein extract" refers to PF1, since it is specifically referred to as an extract in claim 1, or PF3, which is referred to as a "fraction" in claim 1. The Examiner presumes that PF2, which is called a protein isolate, is not considered with respect to claims 13-15, 17, 19 and 21.

The amendments herein separate claim 1 into three independent claims (claims 1, 31 and 22), each of which separately relates to the production of PF1, PF2 and PF3. Applicants submit that the amendments to the claims render this aspect of the Examiner's objection moot. In light of the amendments, it is clear that PF2 is the extract that precipitates out of the acid soluble lupin protein component when the pH of the component is raised to between 5 and 7 (claim 31), and that PF3 is the extract formed by dehydrating what is left in the soluble lupin protein component after precipitation at pH 5 to 7 (claim 32). That is, it is the soluble component that, upon dehydration, leads to PF3, whereas PF2 can be recovered from the separate, precipitated protein component that has been precipitated out at pH 5 to 7.

(c) With regard to claims 18, 20 and 22, the Examiner indicates the claims refer to PF2 as an extract, yet claim 1 defines PF2 as an isolate.

The specification refers to each of PF1, PF2 and PF3 as extracts, and the claims are amended herein for consistency with this description.

In view of the above, Applicants respectfully request reconsideration and withdrawal of the Examiner's rejection under 35 U.S.C. § 112, second paragraph.

The Present Claims are Patentable over the Art Applied by the Examiner

In Paragraph No. 4, on page 3 of the Office Action, claims 15-18, 23 and 24 are rejected under 35 U.S.C. § 102(b) as being anticipated by WO 99/11143 (hereinafter "WO '143").

In addition, in Paragraph No. 5, on page 4 of the Office Action, claims 15, 17, 18 and 21-23 are rejected under 35 U.S.C. § 102(b) as being anticipated by Applicant's own admission.

In addition, in Paragraph No. 6, on page 4 of the Office Action, claims 15-18, 23, and 24 are rejected under 35 U.S.C. § 102(b) as being anticipated by King et al. (Journal of Food Science, Vol. 50, 1985) (hereinafter "King").

In addition, in Paragraph No. 8, on page 5 of the Office Action, claims 19 and 20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Krinski et al. (U.S. Patent No. 5,766,331) (hereinafter "Krinski").

In addition, in Paragraph No. 9, on page 6 of the Office Action, claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over King taken together with Krinski.

Finally, in Paragraph No. 10, on page 6 of the Office Action, claims 21 and 22 are rejected under 35 U.S.C. § 103(a) as being unpatentable over King taken together with Applicants' own admission or Bertram et al. (U.S. Patent No. 4,056,658) (hereinafter "Bertram").

Applicants traverse and respectfully request the Examiner to reconsider and withdraw the above-listed rejections in view of the amendments to the claims and the following remarks.

The Examiner raises novelty rejections relying on the teachings of WO '143 and King.

The products recited by the identified claims are patentable over the teachings of WO '143 and King, at least because WO '143 and King are directed to the preparation of lupin extracts using defatted flour.

For example, WO '143 refers to lupin protein concentrates and isolates that are useful for forming oil-in-water emulsions and refers, at various points throughout the specification (e.g., page 6, line 28), to the use of defatted lupin grits.

Similarly, King, under Materials and Methods at column 2 of page 82, refers to ground lupin seeds that have been provided by a local grower and defatted with successive volumes of n-hexane until the fat content was determined to be less than 1%.

In contrast, the present claims define processes wherein the lupin meal or flour has not been treated with an organic solvent to remove or strip fat or oil from the meal or flour (i.e., has not been defatted). WO '143 and King do not disclose the use of lupin meal or flour which has not been defatted, and for at least this reason, the product recited by the identified claims is not anticipated by WO '143 and King.

In addition, a technical difference between the presently claimed invention and the prior art documents referred to by the Examiner is that the starting product for the prior art processes is lupin meal or flour that has been treated with an organic solvent to remove or strip fat or oil from the meal or flour. Since the steps defined in the presently claimed processes are brought to bear on a different starting material (i.e., flour that has not been defatted) it necessarily follows that the end products are not the same as the products produced by the prior art methods in terms of their chemical composition.

The objective addressed by the presently claimed invention can therefore be seen as the provision of alternative extracts from lupins, which extracts are themselves new, and possess

new and useful properties. The presently claimed invention provides these alternative extracts by performing the claimed processes on lupin meal or flour, which has not been defatted.

Some of the properties or functionalities of the lupin extracts of the present invention are discussed in the specification, in particular on page 10 and page 11, lines 1 to 24. For example, lupin extracts recovered according to the processes of the presently claimed invention have a very bland flavor and a particularly high functionality with respect to whipping and emulsification. The emulsification can be, for example, up to 700% (as described in Example 3).

In order to arrive at the presently claimed invention, one of ordinary skill in the art would need to replace the defatted lupin seeds taught in WO '943 and King with lupin meal or flour that has not been treated with an organic solvent to remove or strip fat or oil away. Further, one of ordinary skill in the art would also have to make this modification in the expectation of achieving useful products, such as the functionalities described in the present application. Based on WO '143 and King, it would not have been obvious for one of ordinary skill in the art to make this modification since none of the prior art documents teach the use of lupin meal or flour which has not been defatted. For example, King and Krinski specifically direct one of ordinary skill in the art to use defatted flour. In addition, there is no suggestion in any of the prior art documents that making the change to using flour that has not been defatted would lead to new extracts having excellent functionalities.

Accordingly, the claimed processes, and the products obtained thereby, are not obvious because one of ordinary skill in the art would have had no reason to use flour that has not been defatted. As noted above, the processes of the presently claimed invention, when performed upon the new starting material (lupin meal or flour that has not been defatted) leads to different

end products (which are recited by the dependent claims 15-24), which are of excellent utility in a range of food applications, as described in the application.

In view of the above, Applicants respectfully request reconsideration and withdrawal of the anticipation and obviousness rejections of the present claims.

Allowable Subject Matter

In paragraphs 11 and 12 on page 7 of the Office Action, the Examiner indicates that claims 27 and 28 are allowed, and that claim 26 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim.

Applicants thank the Examiner for indicating the above-noted allowable subject matter.

In addition, Applicants submit that all of the other pending claims should be deemed allowable for the reasons explained above.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the local, Washington, D.C. telephone number listed below.

The U.S. Patent Trademark Office is hereby directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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